

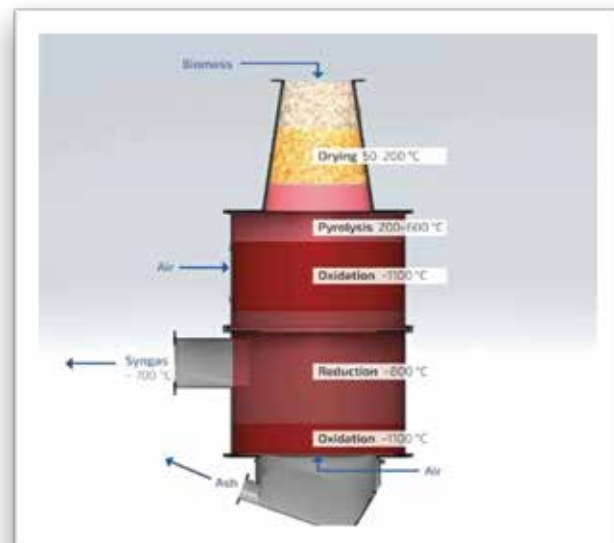
AHT Product Scope - Gas Generation



Overview

Inside the gas generation unit, the feedstock is converted into a synthesis gas. At the heart of this product is the patented AHT twin fire gasifier, which uses air as the gasification medium to generate a high-calorific synthesis gas. This step includes the drying, pyrolysis and gasification of the feedstock material inside the dedicated zones of the gasifier. At the outlet of the gasifier, the raw syngas is collected. From there, it can be diverted towards the gas flare (esp. during start-up or shut-down) or towards the downstream gas conditioning unit.

Feeding of feedstock into the gasifier is achieved via a sealed feedstock lock, preventing the uncontrolled leakage of gases to the environment.”



Products

AHT offers two high-performance gasification reactors designed for reliable, efficient, and clean syngas production. For each of these gasifier types, AHT’s gas generation is complemented by fitting additional equipments (e.g. gas flare, feedstock lock). Listed below are their technical specifications.



Twin-Fire Performance



Twin-Fire Industrial

Technical Data

Product Name	Twin-Fire Compact	Twin-Fire Performance	Twin-Fire Industrial
Cold Gas Efficiency	75%	75%	60%
Carbon Conversion	>90%	>90%	>90%
Feedstock Consumption	170 - 210 kg/h	340 - 425 kg/h	680 kg/h
Gas Output	450 Nm³/h 200- 250 kW	680 - 1000 Nm³/h 990 - 1500 kW	1900 Nm³/h 2000 - 3000 kW
Total Efficiency (Thermal + Chemical Energy of Syngas) / Chemical Energy of Feedstock	90%	90%	90%
Space Required	350 m²	350 m²	350 m²
Height Required	11 m	11 m	11 m

Process Breakdown

- 1** After preconditioning, the biomass is automatically fed into the gasifier from above, ensuring a continuous and controlled material flow.
- 2** The AHT twin-fire reactor combines both updraft and downdraft gasification principles within two defined oxidation zones, enabling stable operation, high conversion efficiency, and controlled reaction conditions inside the reactor.
- 3** Through a controlled supply of air, hydrocarbon compounds within the biomass are thermochemically converted into a combustible synthesis gas, allowing for immediate utilization.
- 4** The generated process gas is extracted from the middle section of the reactor under negative pressure, ensuring stable gas withdrawal and preventing unwanted gas leakage throughout system operation.
- 5** The residual ash is automatically discharged from the lower section of the reactor via a grate and screw conveyor system, enabling continuous operation. If desired, the ash can be further utilized economically on an individual project basis.
- 6** During start-up and shut-down phases, the generated syngas is transferred to the gas flare, where it is reliably converted into a harmless flue gas, ensuring smooth overall process performance.

Benefits

Through our syngas generation technology, a wide range of benefits can be achieved, including:

01 High Efficiency

Through our technology, a total efficiency of 90% can be achieved, ensuring that almost all the energy from the feedstock is converted.

02 Clean Syngas Output

Through a combination of updraft and downdraft gasification within our reactors, a purified syngas that is low in tar and ash is produced.

03 Wide Feedstock Acceptance

Our reactor has excellent slagging behavior, requiring less stringent feedstock conditioning and allowing a wider range of materials to be used efficiently.

04 High Feedstock Conversion

Our technology enables a close to complete conversion of the feedstock within the gasifier, with only a negligible fraction of the usable energy being retrieved in the gasifier ash. This usable energy in the ash can also be tailored on request.